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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,164

05/31/2006

Shuji Sonezaki

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04/15/2008

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EXAMINER

DO, PENSEE T

ART UNIT

PAPER NUMBER

1641

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/551,164	<b>Applicant(s)</b> SONEZAKI ET AL.	
	<b>Examiner</b> Pensee T. Do	<b>Art Unit</b> 1641	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/31/06; 9/27/05</u>  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-10, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Rohr (US 5,445,970).

Rohr teaches magnetic oxide particles such as titanium oxides (see col. 11, line 58-59) coated with a hydrophilic polymer such as methylacrylamide (see col. 12, line 49). The polymer has carboxylic group. Thus, it is inherent that the carboxyl group of the polymer binds to the hydroxyl group of the titanium oxides via an ester linker since Rohr teaches the same composition. The magnetic oxide particle also comprises a specific binder for a target molecule. (see col. 2, lines 63-65). For claim 3, the size of the particle is 0.01 microns (10 nanometers) to 1000 microns. (see col. 12, lines 62-64).

For claim 4, Rohr also teaches using titanium oxide and an addition magnetic material. (see col. 11, lines 50-65). For claim 5, Rohr teaches methylacrylamide polymer (see col. 12, line 49) is hydrophilic and thus water-soluble. For claim 6, Rohr also teaches the polymers are acrylic or methacrylic acids which are polycarboxylic acids. (see col. 14, line 5). Regarding claim 7, Rohr teaches a co-polymer matrix (col. 11, line 16) and a water-soluble polymer (see col. 11, line 32). Thus, it is inherent that the co-polymer should be water-soluble as well for the whole matrix to be water-soluble and water-

soluble polymer as taught by Rohr contains polycarboxylic acids such as acrylic or methylacrylic acids. For claims 8-10 and 12 the specific binder is an amino acid, peptide, simple protein, and complex protein or an antibody, nucleic acid, carbohydrate which are physiological active substances (see col. 5, lines 15-45).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rohr in view of Mochizuki (US 6,203,955).

Rohr has been discussed above but fails to teach the titanium oxide in an anatase or rutile form.

It is well known in the art and as taught by Mochizuki, titanium oxide is usually available in two forms, anatase or rutile. Thus, it would have been obvious to one of ordinary skills in the art to use either forms since these forms of titanium oxide are readily available.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rohr in view of Handy (6,997,863).

Rohr has been discussed above but fails to teach lipid as a binding agent coated on the magnetic particles.

Handy teaches using magnetic particles coated with lipid in cancer therapy. (see col. 14, lines 18-21).

It would have been obvious to one of ordinary skills in the art to coat lipid on the magnetic particles for use cancer therapy.

Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohr in view of Strober (US 5,985,656).

Rohr has been discussed above but fails to teach suspending the titanium oxide particle into a dispersion liquid such as saline.

Strober teaches suspending magnetic particles coated with antibody in pH buffer saline (see col. 20, lines 9-11).

It would have been obvious to one of ordinary skills in the art to disperse magnetic particles such as titanium oxides in Rohr in a saline buffer as taught by Strober because saline can stabilize the storage of the antibody on the particle as well as the particle itself.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohr in view of Kraus, Jr. (US 6,470,220).

Rohr has been discussed above but fails to teach magnetic particles encapsulated in liposome.

Kraus teaches magnetic particles encapsulated in liposomes for easy delivery of the magnetic as a contrast agent in diagnostic or therapeutic applications. (see col. 5, lines 40-42).

It would have been obvious to one of ordinary skills in the art to incorporate the magnetic/titanium oxide of Rohr in a liposome so that the use of such magnetic /liposome particles can be expanded into the therapeutic and other diagnostic application such as cancer therapy.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pensee T. Do whose telephone number is 571-272-0819. The examiner can normally be reached on Monday-Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1641

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Pensee T. Do/  
Examiner, Art Unit 1641  
March 28, 2008

/Long V Le/  
Supervisory Patent Examiner, Art Unit 1641